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Summary of 4th International Symposium on Computing in Anesthesia and Intensive Care

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The 4th annual symposium was a great success and accomplished a unique interchange of knowledge between scientists, industrialists and clinicians. The conference was attended by more than 250 participants from all parts of the world. Scientific, social and cultural interchanges were accomplished with ease and cordiality. The industrialists-clinicians panel discussion which occupied three hours in the middle part of the conference was the highlight of the conference. The panel discussion was one of the first times that such a meaningful interaction had taken place between high level clinical computer users and top-level industrialists. Such interchanges should be encouraged in the future and were very productive because both sides learned much of the others problems, inhibitions and goals.

The following are my reflections on the meeting:

1. There were many more reports of what people were doing or planning rather than reports of successful computer implementations. Although planning reports are helpful in giving people ideas and testing hypotheses, future meetings should be dedicated to reporting of actual accomplishments. It is much easier to report on a plan or on a partial implementation than it is to report a successful implementation. Investigators are also encouraged to do controlled evaluation experiments when they are implementing new computer activities to assess cost and benefit of their developments.
2. There was very little reported on the evaluation of the effectiveness of computer activities. Many investigators could have discussed either cost effectiveness or increases in quality of patient care as a result of their computer implementations. We are no longer in the position where it is adequate to just show that computer programs can be written, but we must now show that the programs are effective.
3. There was an excellent interaction between clinicians and industrial people. This was the highlight of the conference and one where group interaction was extremely useful.
4. The use of the IBM personal computer, and less extensively the Apple MacIntosh, in intensive care and clinical applications was pervasive. Interfaces are being made between IBM PC's and monitoring equipment as well as respiratory and anesthesia machines. The collective ingenuity of those activities was impressive.
5. The need for a standard interface between the bedside monitors of all types and computers was evident. The industrial panel and clinical users recognized the need and are generally supportive of the medical information bus. Although the proposal for expanding RS-232 communications with devices was proposed, it was clear that such interaction will not work. For example to interface all bedside or surgical devices, an enormously large number of RS-232 serial interface ports are required and, in addition, special software must be written for each device. Development of special hardware and software is not

feasible nor cost effective for most clinical centers. The Medical Information Bus (MIB) now being developed as a standard (IEEE P1073) was discussed with enthusiasm. Those interested in participating in its development are encouraged to contact the committee chairman:

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6. There was a general recognition that there are multiple uses of computer-entered clinical data by more and more investigators. Not only are clinical reports being generated from that data, but statistics, scoring systems and others asking research questions of the data are finding a rich resource in clinical data bases.
7. Tutorials and free paper presentations were very successful in informing physicians and scientists about various aspects of computerized medical care. The tutorials were especially helpful to those who had no previous experience or background with computers. These tutorials started with the basics of computer operations, discussed analog and digital computers, and then went on to discuss medical expert systems.
8. It became apparent during the physician-industrialist panel that physicians and clinicians did not have their 'agenda' well enough organized to tell industry people what they wanted. There is great diversity and difference of opinion among the clinical people which made it impossible for them to agree on very much. However, this symposium provided an opportunity for clinicians to address issues which they felt were important and made those issues known to their industrial counterparts.
9. There is still an overwhelming difference of opinion on how to best enter 'manual' data, such as nurses and physicians notes, into the computer. Everyone is still working on the 'magic' way of getting this type data into the computer. The spread of differences of opinion ranged from those who felt that keyboard data entry was essential and easy to those who suggested that physicians and nurses, especially those in the anesthesia theatre, could not and would not use keyboards at all. Bar coding of medications was suggested as data entry device, but there was little experience with this data entry modality reported at the meeting.
10. Although it wasn't specifically stated, it became apparent that a general data entry mechanism is needed for entry of manual data in the field of patient monitoring. In addition, there is probably a need for some standardized and convenient reporting mechanisms which can be used for generating reports.
11. Commercial data base packages are finding increased use by physicians and clinical investigators. dBASE III, Lotus 1-2-3, Revelation and other similar data bases were widely discussed during the symposium.
12. Dr. Omar Prakash, the symposium organizer, proposed the establishment of The International Academy of Physicians and Scientists Interested in Computers in Monitoring and invited those present to seek membership. He felt that the 'academy meet every 12 to 18 months in a two-day closed-door session with industrialist leaders.' He explained that he had approached his industrial counterparts and had their support to establish such an academy. He proposed a 3–5 year membership tenure in the academy. Dr. Prakash explained that a 'high-tech' tour will be made of Asia to include New Delhi, Bombay, Trivandrum, in India, then Manila, Jakarta and Singapore. This group will consist of about 15 people who will travel to this area of the world and investigate monitoring systems and make recommendations about the type of monitoring systems which might be most useful there.